What is claimed is:

1. An electric bed comprising:

a back bottom;

a knee bottom;

a first drive section for rocking said back bottom up and down;

a second drive section for rocking said knee bottom up and down; and

a control section which controls said first drive section and said second drive section in such a way that a back angle α that is a lift-up angle of said back bottom from a horizontal state and a knee angle β that is a lift-up angle of said knee bottom from a horizontal state change along a preset pattern, and which has a storage section for storing a pattern connecting between a coordinate point (0, 0) at which each of said back bottom and said knee bottom is horizontal and a coordinate point (α_0, β_0) at which said back bottom is lifted up in (α, β) coordinates by a plurality of points and an operation section for controlling said first drive section and said second drive section in such a way that said back angle α and said knee angle β change along said pattern.

2. A control method for an electric bed comprising a back bottom, a knee bottom, a first drive section for rocking said back bottom up and down and a second drive section for rocking said knee bottom up and down, said control method comprising the steps of:

presetting, in a control section, a pattern connecting

between a coordinate point (0, 0) at which each of said back bottom and said knee bottom is horizontal and a coordinate point (α_0, β_0) at which said back bottom is lifted up in (α, β) coordinates by a plurality of points, said (α, β) coordinates being defined by a back angle α that is a lift-up angle of said back bottom from a horizontal state and a knee angle β that is a lift-up angle of said knee bottom from a horizontal state change along a preset pattern; and

driving said first drive section and said second drive section in such a way that said back angle α and said knee angle β change along said pattern.

3. A control apparatus for controlling an electric bed comprising a back bottom, a knee bottom, a first drive section for rocking said back bottom up and down and a second drive section for rocking said knee bottom up and down, said control apparatus comprising:

a storage section for a pattern connecting between a coordinate point (0, 0) at which each of said back bottom and said knee bottom is horizontal and a coordinate point (α_0, β_0) at which said back bottom is lifted up in (α, β) coordinates by a plurality of points, said (α, β) coordinates being defined by a back angle α that is a lift-up angle of said back bottom from a horizontal state and a knee angle β that is a lift-up angle of said knee bottom from a horizontal state change along a preset pattern; and

an operation section for controlling said first drive section and said second drive section in such a way that said back angle α and said knee angle β change along said

pattern.

4. The electric bed according to claim 1, wherein as said pattern, a lift-up pattern for lifting said back bottom up from said horizontal state and a lift-down pattern for lifting said back bottom down to said horizontal state from a lifted-up state are provided separately.

5. The electric bed according to claim 4, further comprising an operation box for selecting either a back lift-up operation for lifting said back bottom up from said horizontal state and a back lift-down operation for lifting said back bottom down to said horizontal state and inputting a start signal for starting an operation of said control section, and

wherein in case where said start signal instructs initiation of said back lift-up operation, said operation section compares said lift-up pattern with said back angle α and said knee angle β, outputs a stop request when said back angle α or said knee angle β matches with said lift-up pattern, outputs a lift-up operation request when said back angle α or said knee angle β is smaller than a value designated by said lift-up pattern and outputs a lift-down operation request when said back angle α or said knee angle β is greater than said value designated by said lift-up pattern, and in case where said start signal instructs initiation of said back lift-down operation, said operation section compares said lift-down pattern with said back angle α and said knee angle β, outputs said stop request when said back angle α or said knee angle β matches with said lift-

down pattern, outputs said lift-up operation request when said back angle α or said knee angle β is smaller than a value designated by said lift-down pattern and outputs said lift-down operation request when said back angle α or said knee angle β is greater than said value designated by said lift-down pattern.

6. The electric bed according to claim 5, wherein said operation box has a first switch for commanding initiation of said back lift-up operation and a second switch for commanding initiation of said back lift-down operation, and said operation section determines that initiation of said back lift-up operation has been instructed when said first switch is set on, determines that initiation of said back lift-down operation has been instructed when said first switch is set off and said second switch is set on, and outputs said stop request when both of said first switch and said second switch are off.

7. The electric bed according to claim 4, further comprising a back bending portion for coupling said back bottom to said knee bottom in a bendable manner, and wherein said back angle α is 75°, said knee angle β is 0°, coordinate points which constitute said lift-up pattern are (0, 0), (0, 25±3), (40±3, 25±3), (47±3, 15±3), (60±3, 15±3) and (75±3, 0) and coordinate points which constitute said lift-down pattern are (75±3, 0), (64±3, 10±3), (50±3, 10±3), (40±3, 25±3), (19±3, 25±3), (0, 10±3) and (0, 0).

8. The electric bed according to claim 7, wherein a fixed waist bottom is coupled between said back bending

portion and said knee bottom, a foot bottom is coupled to an opposite side of said knee bottom to said back bottom via a bendable knee bending portion, and said foot bottom is coupled to said knee bottom by a link mechanism and moves in response to movement of said knee bottom.

9. The control method according to claim 2, wherein as said pattern, a lift-up pattern for lifting said back bottom up from said horizontal state and a lift-down pattern for lifting said back bottom down to said horizontal state from a lifted-up state are provided separately.

10. The control method according to claim 9, wherein in case where initiation of a back lift-up operation for lifting said back bottom up from said horizontal state is instructed, said lift-up pattern is compared with said back angle α and said knee angle β, a stop request is output when said back angle α or said knee angle β matches with said lift-up pattern, a lift-up operation request is output when said back angle α or said knee angle β is smaller than a value designated by said lift-up pattern and a lift-down operation request is output when said back angle α or said knee angle β is greater than said value designated by said lift-up pattern, and in case where initiation of a back lift-down operation for lifting said back bottom down to said horizontal state is instructed, said lift-down pattern is compared with said back angle α and said knee angle β, said stop request is output when said back angle α or said knee angle β matches with said lift-down pattern, said lift-up operation request is output when said back angle α or

said knee angle β is smaller than a value designated by said lift-down pattern and said lift-down operation request is output when said back angle α or said knee angle β is greater than said value designated by said lift-down pattern.

11. The control method according to claim 9, wherein said back bottom is coupled to said knee bottom in a bendable manner by a back bending portion, and said back angle α is 75°, said knee angle β is 0°, coordinate points which constitute said lift-up pattern are (0, 0), (0, 25±3), (40±3, 25±3), (47±3, 15±3), (60±3, 15±3) and (75±3, 0) and coordinate points which constitute said lift-down pattern are (75±3, 0), (64±3, 10±3), (50±3, 10±3), (40±3, 25±3), (19±3, 25±3), (0, 10±3) and (0, 0).

12. The control method according to claim 11, wherein a fixed waist bottom is coupled between said back bending portion and said knee bottom, a foot bottom is coupled to an opposite side of said knee bottom to said back bottom via a bendable knee bending portion, and said foot bottom is coupled to said knee bottom by a link mechanism and moves in response to movement of said knee bottom.

13. The control apparatus according to claim 3, wherein as said pattern, a lift-up pattern for lifting said back bottom up from said horizontal state and a lift-down pattern for lifting said back bottom down to said horizontal state from a lifted-up state are provided separately.

14. The control apparatus according to claim 13, further comprising an operation box for selecting either a back lift-up operation for lifting said back bottom up from

said horizontal state and a back lift-down operation for lifting said back bottom down to said horizontal state and inputting a start signal for starting an operation of said control section, and

wherein in case where said start signal instructs initiation of said back lift-up operation, said operation section compares said lift-up pattern with said back angle α and said knee angle β, outputs a stop request when said back angle α or said knee angle β matches with said lift-up pattern, outputs a lift-up operation request when said back angle α or said knee angle β is smaller than a value designated by said lift-up pattern and outputs a lift-down operation request when said back angle α or said knee angle β is greater than said value designated by said lift-up pattern, and in case where said start signal instructs initiation of said back lift-down operation, said operation section compares said lift-down pattern with said back angle α and said knee angle β, outputs said stop request when said back angle α or said knee angle β matches with said lift-down pattern, outputs said lift-up operation request when said back angle α or said knee angle β is smaller than a value designated by said lift-down pattern and outputs said lift-down operation request when said back angle α or said knee angle β is greater than said value designated by said lift-down pattern.

15. The control apparatus according to claim 14, wherein said operation box has a first switch for commanding initiation of said back lift-up operation and a second

switch for commanding initiation of said back lift-down operation, and said operation section determines that initiation of said back lift-up operation has been instructed when said first switch is set on, determines that initiation of said back lift-down operation has been instructed when said first switch is set off and said second switch is set on, and outputs said stop request when both of said first switch and said second switch are off.

16. The control apparatus according to claim 13, wherein said back bottom is coupled to said knee bottom in a bendable manner by a back bending portion, and said back angle α is 75°, said knee angle β is 0°, coordinate points which constitute said lift-up pattern are (0, 0), (0, 25±3), (40±3, 25±3), (47±3, 15±3), (60±3, 15±3) and (75±3, 0) and coordinate points which constitute said lift-down pattern are (75±3, 0), (64±3, 10±3), (50±3, 10±3), (40±3, 25±3), (19±3, 25±3), (0, 10±3) and (0, 0).

17. The control apparatus according to claim 16, wherein a fixed waist bottom is coupled between said back bending portion and said knee bottom, a foot bottom is coupled to an opposite side of said knee bottom to said back bottom via a bendable knee bending portion, and said foot bottom is coupled to said knee bottom by a link mechanism and moves in response to movement of said knee bottom.

18. An electric bed comprising:

a back bottom;

a knee bottom;

a first drive section for rocking said back bottom up

and down;

a second drive section for rocking said knee bottom up and down; and

a control section which controls said first drive section and said second drive section in such a way that a back angle α that is a lift-up angle of said back bottom from a horizontal state and a knee angle β that is a lift-up angle of said knee bottom from a horizontal state change along a preset pattern, and which has a storage section for segmenting (α, β) coordinates into a plurality of areas by taking, as a reference, a pattern connecting between a coordinate point (0, 0) at which each of said back bottom and said knee bottom is horizontal and a coordinate point (α_0, β_0) at which said back bottom is lifted up in said (α, β) coordinates by a plurality of points and storing operational modes of said back bottom and said knee bottom for each area, and an operation section for determining in which one of said areas said back bottom and said knee bottom are located and controlling said first drive section and said second drive section based on said operational modes of that determined area.

19. A control method for an electric bed comprising a back bottom, a knee bottom, a first drive section for rocking said back bottom up and down and a second drive section for rocking said knee bottom up and down, said control method comprising the steps of:

segmenting (α, β) coordinates, defined by a back angle α that is a lift-up angle of said back bottom from a

horizontal state and a knee angle β that is a lift-up angle of said knee bottom from a horizontal state change along a preset pattern, into a plurality of areas by taking, as a reference, a pattern connecting between a coordinate point (0, 0) at which each of said back bottom and said knee bottom is horizontal and a coordinate point (α_0, β_0) at which said back bottom is lifted up in said (α, β) coordinates by a plurality of points;

presetting operational modes of said back bottom and said knee bottom in a control section for each area;

determining in which one of said areas said back bottom and said knee bottom are located; and

controlling said first drive section and said second drive section based on said operational modes of that determined area.

20. A control apparatus for controlling an electric bed comprising a back bottom, a knee bottom, a first drive section for rocking said back bottom up and down and a second drive section for rocking said knee bottom up and down, said control apparatus comprising:

a storage section for segmenting (α, β) coordinates, defined by a back angle α that is a lift-up angle of said back bottom from a horizontal state and a knee angle β that is a lift-up angle of said knee bottom from a horizontal state change along a preset pattern, into a plurality of areas by taking, as a reference, a pattern connecting between a coordinate point (0, 0) at which each of said back bottom and said knee bottom is horizontal and a coordinate

point (α_0, β_0) at which said back bottom is lifted up in said (α, β) coordinates by a plurality of points, and storing operational modes of said back bottom and said knee bottom in a control section for each area; and

an operation section for determining in which one of said areas said back bottom and said knee bottom are located, and controlling said first drive section and said second drive section based on said operational modes of that determined area.

21. The electric bed according to claim 18, wherein as said pattern, a lift-up pattern for lifting said back bottom up from said horizontal state and a lift-down pattern for lifting said back bottom down to said horizontal state from a lifted-up state are provided separately.

22. The electric bed according to claim 21, further comprising an operation box for selecting either a back lift-up operation for lifting said back bottom up from said horizontal state and a back lift-down operation for lifting said back bottom down to said horizontal state and inputting a start signal for starting an operation of said control section, and

wherein said operation box has a first switch for commanding initiation of said back lift-up operation and a second switch for commanding initiation of said back lift-down operation, and said operation section determines that initiation of said back lift-up operation has been instructed when said first switch is set on, determines that initiation of said back lift-down operation has been

instructed when said first switch is set off and said second switch is set on, and outputs said stop request when both of said first switch and said second switch are off.

23. The electric bed according to claim 21, further comprising a back bending portion for coupling said back bottom to said knee bottom in a bendable manner, and wherein said back angle α is 75°, said knee angle β is 0°, coordinate points which constitute said lift-up pattern are (0, 0), (0, 25±3), (40±3, 25±3), (47±3, 15±3), (60±3, 15±3) and (75±3, 0) and coordinate points which constitute said lift-down pattern are (75±3, 0), (64±3, 10±3), (50±3, 10±3), (40±3, 25±3), (19±3, 25±3), (0, 10±3) and (0, 0).

24. The electric bed according to claim 23, wherein a fixed waist bottom is coupled between said back bending portion and said knee bottom, a foot bottom is coupled to an opposite side of said knee bottom to said back bottom via a bendable knee bending portion, and said foot bottom is coupled to said knee bottom by a link mechanism and moves in response to movement of said knee bottom.

25. The control method according to claim 19, wherein as said pattern, a lift-up pattern for lifting said back bottom up from said horizontal state and a lift-down pattern for lifting said back bottom down to said horizontal state from a lifted-up state are provided separately.

26. The control method according to claim 25, wherein said back bottom is coupled to said knee bottom in a bendable manner by a back bending portion, and said back angle α is 75°, said knee angle β is 0°, coordinate points

which constitute said lift-up pattern are (0, 0), (0, 25±3), (40±3, 25±3), (47±3, 15±3), (60±3, 15±3) and (75±3, 0) and coordinate points which constitute said lift-down pattern are (75±3, 0), (64±3, 10±3), (50±3, 10±3), (40±3, 25±3), (19±3, 25±3), (0, 10±3) and (0, 0).

27. The control method according to claim 26, wherein a fixed waist bottom is coupled between said back bending portion and said knee bottom, a foot bottom is coupled to an opposite side of said knee bottom to said back bottom via a bendable knee bending portion, and said foot bottom is coupled to said knee bottom by a link mechanism and moves in response to movement of said knee bottom.

28. The control apparatus according to claim 20, wherein as said pattern, a lift-up pattern for lifting said back bottom up from said horizontal state and a lift-down pattern for lifting said back bottom down to said horizontal state from a lifted-up state are provided separately.

29. The control apparatus according to claim 28, further comprising an operation box for selecting either a back lift-up operation for lifting said back bottom up from said horizontal state and a back lift-down operation for lifting said back bottom down to said horizontal state and inputting a start signal for starting an operation of said control section, and

wherein said operation box has a first switch for commanding initiation of said back lift-up operation and a second switch for commanding initiation of said back lift-down operation, and said operation section determines that

initiation of said back lift-up operation has been instructed when said first switch is set on, determines that initiation of said back lift-down operation has been instructed when said first switch is set off and said second switch is set on, and outputs said stop request when both of said first switch and said second switch are off.

30. The control apparatus according to claim 29, wherein a fixed waist bottom is coupled between said back bending portion and said knee bottom, a foot bottom is coupled to an opposite side of said knee bottom to said back bottom via a bendable knee bending portion, and said foot bottom is coupled to said knee bottom by a link mechanism and moves in response to movement of said knee bottom.

31. The control apparatus according to claim 30, wherein a fixed waist bottom is coupled between said back bending portion and said knee bottom, a foot bottom is coupled to an opposite side of said knee bottom to said back bottom via a bendable knee bending portion, and said foot bottom is coupled to said knee bottom by a link mechanism and moves in response to movement of said knee bottom.